

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 554 448 A1

(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art.
158(3) EPC

(21) Application number: **91910860.5**

(51) Int. Cl.⁵: **B60R 21/20, B29C 45/14,
B29C 45/16**

(22) Date of filing: **19.06.91**

(86) International application number:
PCT/JP91/00820

(87) International publication number:
WO 91/19629 (26.12.91 91/29)

(30) Priority: **20.06.90 JP 161797/90**

(43) Date of publication of application:
11.08.93 Bulletin 93/32

(84) Designated Contracting States:
DE FR

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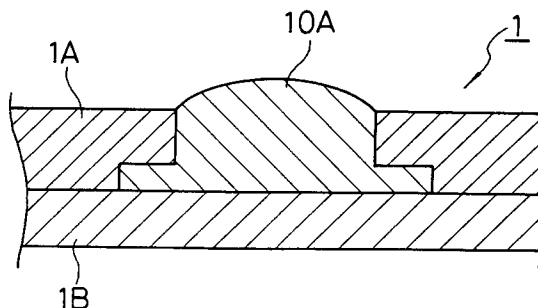
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(54) **COVER FOR RECEIVING AIR BAG.**

(57) A cover (1) whose marks are easy to identify and excellent in durability, in which marks (10A, 10B) appearing on the right side are formed by multicolor molding or insert molding.

FIG. 1a



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TECHNICAL FIELD

The present invention relates to a cover for containing an air bag and particularly, to an air bag cover including marks.

BACKGROUND ART

An air bag is mounted in an automotive vehicle and inflated and deployed by sensing impact or deformation in the event of a vehicle collision. This air bag is contained in an air bag cover.

Fig. 2 is a schematic sectional front view, in part, of an air bag cover attached to an air bag. Fig. 3 is a rear view of the air bag cover.

In the drawing, 1 is an air bag cover. 2 is an air bag. 3 is an inflator. 4 is a ring retainer. 5 is a base retainer. 6 is a plate. 7 are rivets.

The air bag cover 1 includes a main plate 100, and a side plate 101 extending from sides of the main plate 100 and is in the form of a shallow box. The cover 1 is generally made of thermoplastic resin and includes an outer layer 1A, and a core layer 1B made of resin having a greater rigidity than that of the outer layer 1A. A tear line 1C is formed in the core layer 1B to allow the cover 1 to readily rupture when the air bag is deployed. The tear line 1C is in the form, for example, of a groove or an interrupted slit.

Generally, such an air bag cover is made by an injection molding process. One such injection molding process is referred to as an insert injection molding process. After a core layer has been formed, a molded core layer is fit in a mold. The mold has a cavity. A thermoplastic polymer is injected into the cavity of the mold to form an outer layer. Another process is a two-color injection molding process (double injection). After a core layer has been formed, a mold is replaced by the new mold without removing a molded core layer from the mold. A suitable material is injected into a cavity of the new mold to form an outer layer. A tear line is formed in the core layer 1B during the injection molding process.

Marks such as symbols or characters are formed on the air bag cover 1, for example, to identify products. Paint is conventionally used to print such marks. As an alternative, the outer layer 1A is partly embossed during a molding process to form raised marks.

Of these conventional processes, the printing process may cause removal of the paint. If this happens, the marks can no longer be identified. Also, as the marks are simply printed on the outer layer, they do not provide a high quality product. In addition, the marks are printed by paint after a cover has been produced. This results in a decrease in the production efficiency.

In the case where embossing is effected to form raised marks on part of the outer layer while it is being molded, no printing process is involved. Also, the raised marks appear to be somewhat of a higher quality. In this case, however, the raised marks are identical in quality and color to the outer layer as they are made of the same resin. Thus, the esthetic appearance and quality of the cover are not satisfactory. Also, when the raised marks are made of the same resin as the outer layer, it is sometimes difficult to identify the marks subject to types of illumination.

DISCLOSURE OF THE INVENTION

It is an object of the present invention to solve the problems encountered in the prior art and to provide an air bag cover which increases the esthetic appearance and quality of marks, facilitates identification of marks, and prevents removal of marks, and which can be effectively produced.

According to the present invention, there is provided an air bag cover including raised marks made by a multi-color molding process or an insert molding process.

In the case where marks are made by a multi-color molding process, the marks project from the outer layer. In the case where marks are made by an insert molding process, metal or other inorganic materials, rather than resin, are used to form raised marks on the outer layer.

With the air bag cover of the present invention, the marks are different in quality, color and luster from the outer layer and have good esthetic appearance and high quality. The marks can also be readily identified and is durable.

The marks are formed during a series of injection molding steps and requires no further step to increase the production efficiency.

BRIEF DESCRIPTION OF THE DRAWINGS

Figs. 1a and 1b are sectional views illustrating marks formed on an air bag cover made according to one embodiment of the present invention; Fig. 2 is a schematic sectional front view, in part, of the air bag cover attached to an air bag; and

Fig. 3 is a rear view of the air bag cover.

BEST MODE FOR CARRYING OUT THE INVENTION

The present invention will now be described in detail, by way of example, with reference to the drawings.

Referring to Fig. 1a, an air bag cover 1 includes an outer layer 1A. Marks 10A are made by

a multi-color molding process and project from the outer layer 1A. Specifically, a material is first injected into a mold to form a core layer 1B. The mold, rather than the core layer, is then replaced by a new mold. This new mold has a cavity. A suitable material is injected into this cavity to provide marks. Thereafter, the mold, rather than the molded marks, is replaced by another mold. This mold also has a cavity. A material is then injected into this cavity to form an outer layer. The air bag cover of the present invention is made by a three-color molding process.

In the air bag cover shown in Fig. 1a, any resin may be used to form the marks, and such resin may, if necessary, differ in quality, luster and color from that used to form the outer layer 1A.

In the air bag cover shown in Fig. 1b, a mark 10B is made by an insert molding process and projects from the outer layer 1A. Specifically, the mark 10B is fit in a mold. The core layer 1B and the outer layer 1A are then made by a two-color molding process.

In the air bag cover shown in Fig. 1b, metal, glass, ceramic or other inorganic materials may be used to form the marks 10B. Also, resin may be used if it is durable at an injection molding temperature.

According to the present invention, the outer layer and the core layer may be made of any resin or those used in the prior art. A reinforcing net and the like may be inserted.

Also, according to the present invention, the marks may be any kind (character, symbol or design), may have any size, and may be formed in any place. To prevent removal of the mark from the outer layer 1A, the mark is preferably shaped such that the area of the mark embedded in the outer layer 1A (the sectional area of the mark extending in parallel to the surface of the outer layer 1A) is greater than that of the mark projecting from the outer layer 1A as shown in Figs. 1a and 1b.

INDUSTRIAL APPLICABILITY

As previously described in detail, the present invention provides an air bag cover including marks which has good esthetic appearance and high quality, and which can readily be identified and is durable.

Also, according to the present invention, the air bag cover is made by a reasonable molding process. This easily, accurately, and effectively produces an air bag cover with high yield and can considerably reduce the production cost.

Claims

1. A cover made of synthetic resin and used in an air bag assembly, characterized by marks projecting from the cover and made by a multi-color molding process.
2. The cover of claim 1, wherein said marks are made of resin which is different in at least one of quality, luster and color from that of which the surface of said cover is made.
3. The cover of claim 1, wherein said multi-color molding process is a three-color molding process.
4. A cover for containing an air bag, characterized by marks projecting from the cover and made by an insert molding process.
5. The cover of claim 3, wherein said marks are made of metal, glass or ceramic.
6. The cover of claim 1, wherein said cover is in the form of a box and includes a main plate and a side plate extending from sides of said main plate.
7. The cover of claim 1, wherein said synthetic resin is a thermoplastic synthetic resin.
8. The cover of claim 1, wherein the area of each of said marks embedded in said cover is greater than that of said mark projecting from said cover.

FIG. 1a

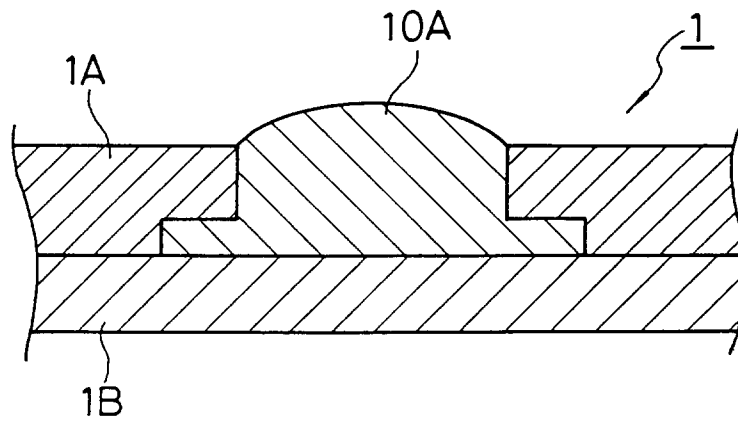


FIG. 1b

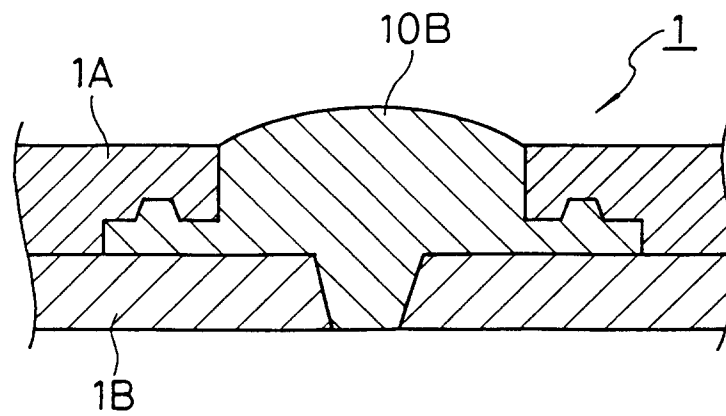


FIG. 2

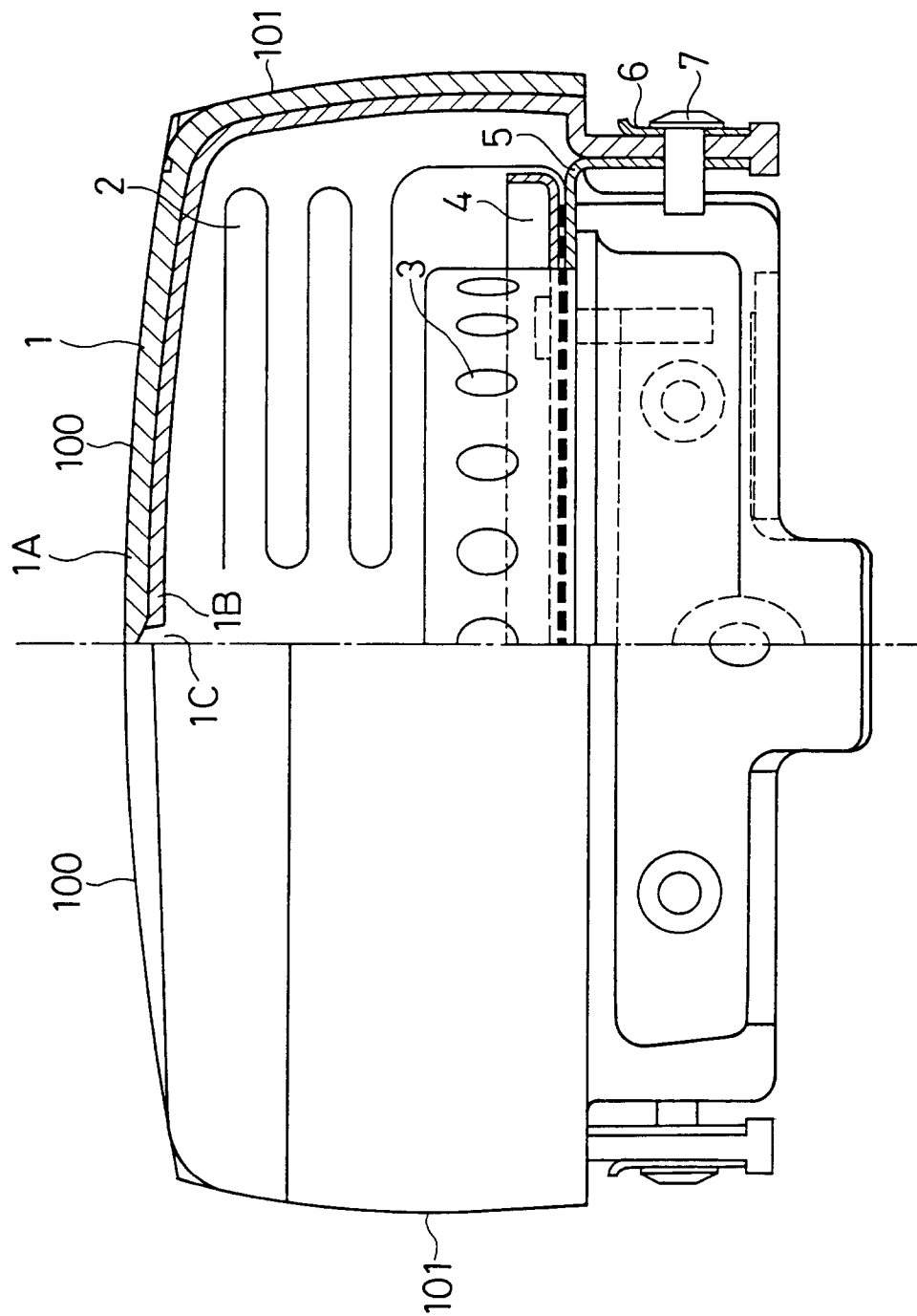
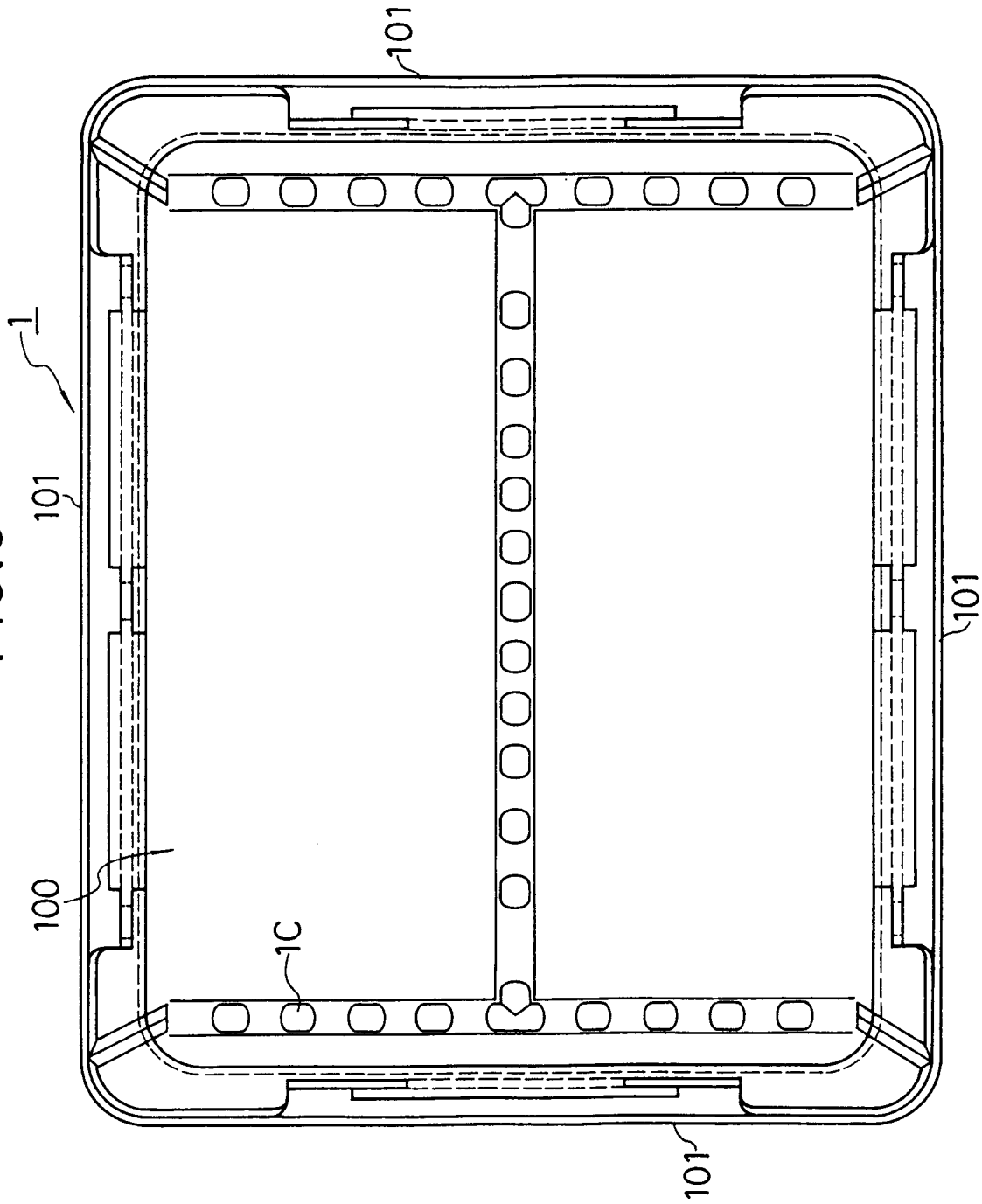


FIG. 3



INTERNATIONAL SEARCH REPORT

International Application No PCT/JP91/00820

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. Cl ⁵ B60R21/20, B29C45/14, 45/16		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
IPC	B60R21/20, B29C45/14, 45/16, B29F1/12	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
Jitsuyo Shinan Koho	1970 - 1990	
Kokai Jitsuyo Shinan Koho	1971 - 1990	
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
Y	JP, U, 1-123562 (Tokai Rika Denki Seisakusho, K.K.), August 22, 1989 (22. 08. 89), (Family: none)	1-8
Y	JP, A, 55-3972 (Nissei Jushi Kogyo Co., Ltd.), January 12, 1980 (12. 01. 80), Line 19, upper left column to line 10, lower left column, page 2 (Family: none)	1-3, 5, 7
Y	JP, A, 58-76243 (Toyoda Gosei Co., Ltd.), May 9, 1983 (09. 05. 83), Line 14, upper left column to line 11, lower left column, page 2 (Family: none)	4, 8
<p>* Special categories of cited documents: ¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
September 5, 1991 (05. 09. 91)	September 24, 1991 (24. 09. 91)	
International Searching Authority	Signature of Authorized Officer	
Japanese Patent Office		